

7 Capsule to help shed kilos

A self-inflating capsule, being developed by local researchers at Nanyang Technological University, could one day help obese people to shed weight. **HOME B5**

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Local team develops self-inflating capsule to help shed kilos

Orally ingested pill induces feeling of fullness in stomach so less is consumed

Felicia Choo

A self-inflating capsule being developed by local researchers could one day help overweight or obese people – for whom diet and exercise have proven futile – to shed the kilos.

The team hopes it will provide a non-invasive alternative to the intragastric balloon, which is inserted by an endoscopy or catheter into the stomach, to make patients feel fuller faster and limit what they can eat.

The EndoPil capsule is designed to be ingested orally and, once in the stomach, can be inflated with a handheld magnet to induce a sense of fullness, said Professor Louis Phee, 48, dean of engineering at Nanyang Technological University.

Measuring 3cm by 1cm, it has an outer gelatine casing that contains a deflated balloon, an inflation valve with a magnet attached, and citric acid and salt stored in separate compartments in an inner capsule.

Designed to be swallowed with a glass of water, the capsule enters



Professor Lawrence Ho (left), clinician-innovator at the National University Health System, with the expanded EndoPil capsule, and Professor Louis Phee, dean of engineering at Nanyang Technological University, with the pre-inflated capsule that is designed to be swallowed. ST PHOTO: TIMOTHY DAVID

the stomach, where the acid within breaks open the outer casing and an external magnet is used to open the inflation valve.

This allows the acid and the salt to mix and react, producing carbon dioxide that fills up the balloon and makes it float to the top of the stomach – the portion that is more sensitive to fullness, said Prof Phee.

The balloon can be inflated to 120ml within three minutes and can be deflated magnetically to a

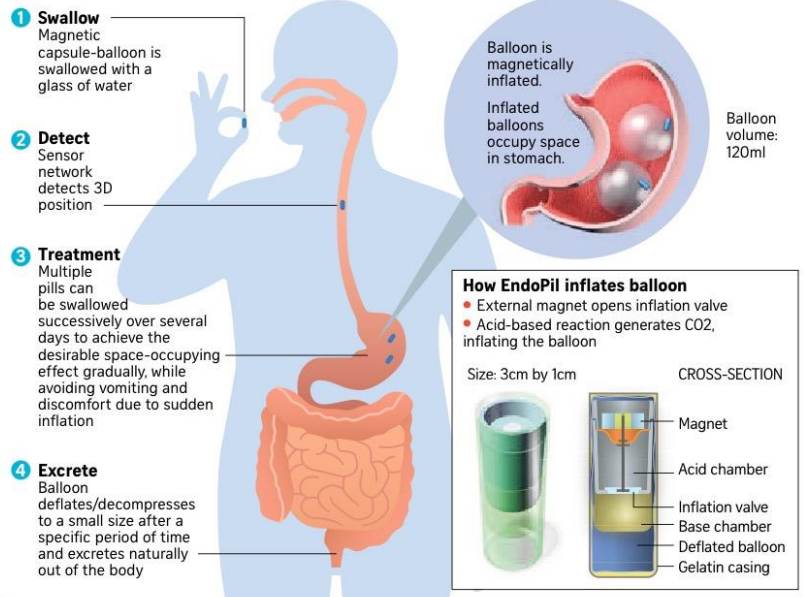
size small enough to enter the small intestines and pass through the body's digestive system.

The researchers intend for the capsule to be administered by doctors in the outpatient or even primary care setting, cutting out hospital stay and reducing costs.

"It's not just for the morbidly obese; it's for everyone who just wants to lose a few kilos," said Prof Phee. "The cost will be comparable to something that you can buy

The pill that could tackle obesity

EndoPil induces a sense of fullness once it is inflated. Here's how it works.



Source: NTU GRAPHICS: LEE HUP KHENG, LEE YU HUI

from a pharmacy."

While the intragastric balloon is usually left inside the stomach for up to six months, the EndoPil would be removed within a month so that the stomach does not grow used to the balloon's presence, said Professor Lawrence Ho, 57, director of the Centre for Innovation in Healthcare at the National University Health System.

This would also ensure that the space-occupying effect in the stom-

ach is achieved gradually while side effects due to sudden inflation such as vomiting and discomfort can be avoided, he added.

In tests, the capsule was inserted through an endoscope in a pig which lost 1.5kg after a week. It was also tested on a female patient here for about five minutes using an endoscope. She did not experience any discomfort or injury from the inflation of the balloon.

Researchers are now working on

programming the capsule to biodegrade and deflate after a stipulated timeframe, before being expelled naturally. They will also conduct trials in the future where the capsule is ingested orally.

A United States patent has been filed for EndoPil, and Prof Phee and Prof Ho plan to spin off the technology into a start-up company of the same name.

feliciac@sph.com.sg